LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: April 7-11 , 2008.

NIF's fusion quest in the science spotlight

It's the largest laser in the world and it's being built at Lawrence Livermore National Laboratory. The National Ignition Facility will shoot tremendous bursts of energy at an area the size of a penc eraser. The goal? To recreate fusion, which powers the sun, perhaps harnessing a new source c clean energy for the 21st century.

The National Ignition Facility, the world's most energetic laser, takes the spotlight on the next episode of "Quest," KQED's weekly science series. The segment, "Super Laser at the National Ignition Facility," is set to premiere on KQED Tuesday, April 15.

Tune in to Bay Area TV Channel 9, or watch it on the Web, starting Tuesday, 7:30 p.m., at www.kqed.org/quest.

T-REX: Invisible teeth but a powerful bite

Unlike the "tyrant lizard" of the Jurassic Period, Lawrence Livermore's Thomson-Radiated Extreme X-ray Source, better known as T-REX, is geared more toward defense. Its X-rays and gamma rays, the strongest yet outside a synchrotron, could aid port security by detecting concealed highly enriched uranium.

R&D magazine takes a look at this ground-breaking laser in its latest issue. For more see http://www.rdmag.com/ShowPR.aspx?PUBCODE=014&ACCT=1400000100&ISSUE=0804&REL YPE=PSC&PRODCODE=0000000&PRODLETT=DQ&CommonCount=0

Fingerprinting fugitive microbes

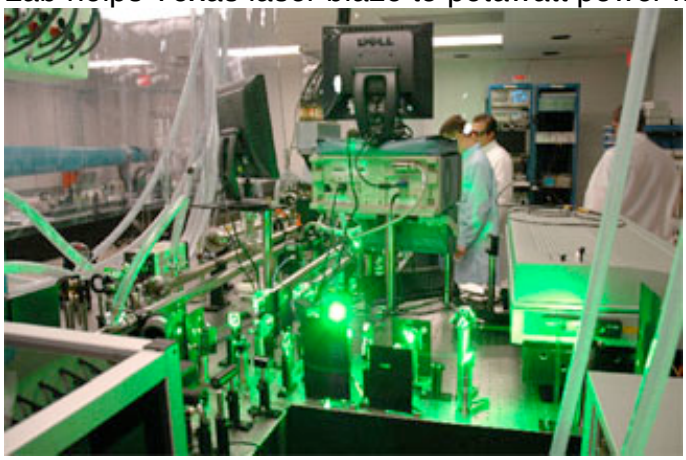
SCIENCE NEWS

THE WEEKLY NEWSMAGAZINE OF SCIENCE

Genetically engineered bacteria are being put to work for everything from pharmaceuticals to fuels. But how do you track the invisible critters if they ever get loose – or worse, if engineered pathogens were ever released as an act of bioterrorism?

Lawrence Livermore scientist Jonathan Allen and his colleagues have developed a tool that finds "fingerprints" in the microbes' DNA that can distinguish altered bacteria from natural ones. Science News' online journal spotlights the technology in its latest issue, at http://www.sciencenews.org/articles/20080329/note14.asp

Lab helps Texas laser blaze to petawatt power milestone



The front end of the Texas Petawatt laser.

Using optics and expertise developed at LLNL, a laser at the University of Texas has demonstrated more than one quadrillion watts (one petawatt) of power. The Texas Petawatt lase is the first of its kind to be completed in the United States since the deactivation of the original petawatt laser at LLNL in 1999.

According to Todd Ditmire of the Texas Center for High Intensity Laser Science, the Texas Petawatt is now the highest-power operating laser in the world. Ditmire credits LLNL Principal Associate Director Ed Moses and members of the National Ignition Facility and Photon Science Principal Directorate for their help in achieving the milestone. "We couldn't have done it without tl help of LLNL and the NIF people," he said.

For more, see the story at https://newsline.llnl.gov/articles/2008/apr/04.11.08_texas.php

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LLNL is managed by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy's National Nuclear Security Administration.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

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